



Title: Modified Barley α -Glucosidase
Inventor(s): Henson/Muslin/Clark
Application No.:
Docket Number: 960296.97486

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BARLEY	MA-----TVCV-----LILCLCLCLFAPRLCSSKEECFLAAR---	(32)
S. BEET	Me-----rskipryicptlavvLpLvLCmvvegatrSKndrqqeAigvg	(44)
SPINACH	MkkkipalalCi-----LLvflLqyLvAqistSendpeuvigy--	(38)
ARABID.	Ms-----sihwfpnif----lvvvfLeLrssqvyleeEEstvvgy--	(37)
BARLEY	-----TVLAVAVTMEG-----ALRAEAATGCRSSTG-----DVQRLAVY	(66)
S. BEET	yqvkakvdnstgkal-----tallqlirnsppvyp-----DihfLsft	(35)
SPINACH	-----gykvk6Vxvds-----gtRrsLtalpqlvknssvygpdQLLait	(78)
ARABID.	-----gyvrvvgvdsnrqvltakldlikpasyap-----DiksLnlh	(76)
BARLEY	ASLETSRLRVRIITADHPRWEVPODIIPRPAPGD-----VLHDAFPA	(109)
S. BEET	ASfEeDdtLRiRITDAnnRWEiPnevlpFPpPppppplslqhlpxPi	(133)
SPINACH	ASLEandRLRVRIITDAKlRWEiPdnlhRhqPpp-----ppphlss	(121)
ARABID.	vSLETseRLRiRITDssqqrWEiPetvIPRagnhe-----prifstee	(119)
BARLEY	S-----S-----APLQCRVLSFAGSDLVLTV-H-ASPFRFTVSRSTGDT	(147)
S. BEET	p-----q-----ngptcttVLShphSDLaflfH-ttPFgFTiYrkStHdv	(172)
SPINACH	lyrtllspt--tnrrkilLShpnSDLfcl-nttPFgFTiSRkStHdv	(168)
ARABID.	d-----ggnsPennfladPsdLvlftlh-n-ttFFgFsVSRFSsGDi	(159)
BARLEY	LFDTPAG-----L-----VFRDKYLEVTSALPAGRASLYGLGEHTK	(183)
S. BEET	LFDatPipenpttL-----iykDqYLqlsSsLPAqgAhLYGLGEHTK	(215)
SPINACH	LFDatPdpntptntL-----iFiDqYLhlTSsLFgtrahiyGLGEHsK	(211)
ARABID.	LFDTSpd-----sdsntyfiFkDqLqlsSALPenRenLYGiGEHTK	(202)
BARLEY	SSFRLRHDSFTLWNADIGASYVDVNLVYGSHPFYMDVRAP-----GTAH	(227)
S. BEET	ptFqlaHNgilTLWNADIGasfndINLYGSHPFYMDVRsppm---GstH	(262)
SPINACH	ptFqlaHNgilTLmraADIPsSnpDVNLVYGSHPFYMDVRsppva---GstH	(258)
ARABID.	rSFRLLipgetmTLWNADIGaenpDVNLVYGSHPFYMDVRgkoneaGtH	(252)
BARLEY	GVLLLSNGMDVLYGGSYVTVKVIQGVLDYFFACSPNPLAVVDQYTQLIA	(277)
S. BEET	GVfLLnSNGMDVeytCGrTYKVIGGiDLYIFAGrtPemVLDQYtkLIg	(312)
SPINACH	GVLLLrSNGMDVeytGrTYKVIGGiDLYIFAGPsPgqVVeQFTrvIg	(308)
ARABID.	GVLLLnSNGMDVkyeChriTYnVIGGVLDLYVfAGPsPemVmnQYTeLIg	(302)
BARLEY	RPAPMPYWSFGFHQCRYCYLNVSDLERVWARYAKARIPLVHMWDIDYMD	(327)
S. BEET	RPAPMPYHafGFHQCRGyrdvreiEtVvdkYaeARJPLEVMWTDIDYMD	(362)
SPINACH	RPAPMPYHafGFQCRYCYhdVyeLqcvVAGYAKAKIPLVHMWDIDYMD	(356)
ARABID.	RPAPMPYWSFGFHQCRYCYLNVSDLEYVvdyYAKAgFLEVHMWDIDYMD	(352)
BARLEY	GFKDFTLDRVNFIAAELRFFVDRLPRNAQKYVLILDPGIRVDPICATYGT	(377)
S. BEET	aFKDFTLDPvHfpldkmqgFVckLHRNgQryVpILDPGI---ntnksYGT	(409)
SPINACH	ayKDFTLEpVNFpldkmkkfVnnLHKNgQKYVvILDPGI---stnkTYeT	(405)
ARABID.	GyKDFTLDPVNFpeckmqgFVDtLHKNgQKYVLILDPGI---gvDssYGT	(399)
BARLEY	FVRGMCCDIFLKRNGTNFVGNVWPGDVYFPDFMHFAAAEFWAREISLFR	(427)
S. BEET	FVRGMQsnvFikRNGnpylGsvWPGpVYVFDfIdFAAREFWvdeIkFRd	(459)
SPINACH	yVRGMkhDvFLKPNKqylGevWPGpVYFPDFlkPaltFwdeEikRFln	(455)
ARABID.	ynRGMeadvFikRNGepylGevWFGKVYFPDFlnFAAAEFWsnEikRfge	(443)
BARLEY	TTFVDGLWIDMNEISNFYN--PEFMN--ALDDPPYRINNDGTGRPINNKT	(475)
S. BEET	ilPIdGiWIDMNEasNFiteaptPgs--tLDnPPYKINNsgGxvPINsKT	(507)
SPINACH	ilFVDGLWIDMNEISNFis--apPipgstLDnPPYKINNsgvmlPiNKT	(503)
ARABID.	ilFIDGLWIDMNEISNFit--aplsgeelCDFFYKINNsgdkRPINNKT	(497)
BARLEY	VRFLAVHYGGVTEYEENLFGLEARATGRGVLDRTGRPFVLSRSTFVG	(523)
S. BEET	ipatAmHYGnvTEYnahNLYGfLESqATreslvRpatRgPFILSRSTFaG	(557)
SPINACH	ipftAmHYGaiPEYnvNHLFGYLEARvTraalikTekRPFVLSRSTFSG	(553)
ARABID.	VpatsihfGniseYdaNLYGLEAKATHqaVvdTGKRPfILSRSTFVa	(547)
BARLEY	SGRYTAYWTGDNAATWGLDRYSINTMLSFGLFQMFMICADICCFNGNITE	(575)
S. BEET	SGkYTAhWTGDNAARWdLqYSIpTmLnFGLFQMFMICADICCFaesTIE	(607)
SPINACH	SGkYTAhWTGDNAATWdLqYSIpMldFGLFGiPMGADICCFfCNTIE	(603)
ARABID.	SGkYTAhWTGDNAaKWeDLaySIpgiLnFGLFGiPMvGADICCFshdTIE	(597)
BARLEY	ELCGRWICIGAFYFFSRDHSaIFTVRRELYLWFSVAASERKALGLRYCLL	(625)
S. BEET	ELCGRWICIGAFYFFSRDHSaIdtchqELYLWesVAASaRvLGLRYCLL	(657)
SPINACH	ELCGRWICIGAFYFFSRDHSsIgIttyqELYrWeSVAASaRvLGLRYCLL	(653)
ARABID.	ELCGRWICIGAFYFFSRDHSsIgTaRqELYLWdSVAASaRvLGLRYCLL	(647)

FIG 2

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BARLEY	PYFYTLMYEAHMTGAPIARPLFFSYPHDVATYGVDRQFLLCRGVLVSPVL	(673)
S. BEET	PYYTLMYdAnlrGcPIARPLfctPdDVATYGiSSQFLiGRGImVSPVL	(707)
SPINACH	PYFYTLMYEAqlnGiPIARPLFFSfPdDikTYGiesQFLLGkGVmVSPVL	(703)
ARABID.	FhlyTLMYEAHvsCnPIARPLFFSfPqDtkTYeiDsCFLiGksimVSPaL	(697)
BARLEY	EPGPITVDAYFPAGRMYRLYDYS LAVATRTGKHVRLPAPADTVNVHLTGG	(723)
S. BEET	qPGssiVnAYsPrGnWvsLbnYtesVsvsaGtyVsLsAPPDhiNVHiheG	(757)
SPINACH	kPGVvsvtAYFPzGnwfdLfDYtrsvtasTGryVtLsAPPDhiNVHiqEG	(753)
ARABID.	kqGavaVDAYFPAGnwfdLfnySfAVggdsGKHVRLctPADhVNVHvreg	(747)
BARLEY	TILPQQSALTTSRARRTA FHLLVALAEDGTASGYLFLDDGDSPEYGR-R	(772)
S. BEET	nIvamQgeAmTfqaARsTpFHLLVvmsdhvastGeLFLDnGiemdiGg-p	(806)
SPINACH	nILamQgkAmTTqaARKTpFHLLVvmsdcGaefGeLFLDDGvevtmGvnR	(803)
ARABID.	siIvamQgeALTTrdARKTpyqLLVvaerleniSGeLFLDDGcnlrmGa-g	(796)
BARLEY	S---D-WSMVRFNyKIPNNKGAIKVKSEVVHNSYAQSRTLVISKVLMGH	(916)
S. BEET	g---gkwtlVRFFaesgiN--nlcisSEVVnrgYamSgrwVmdKitilGI	(851)
SPINACH	g---k-WtLVKF--iaaeaKqtcitSdVVegefAvSqkwVIDKvtiIGi	(847)
ARABID.	ggrrD-WtLVKF--rcyvtgxevvlrSEVVnpeYAekmkwaIgKVtfvGi	(845)
BARLEY	RSFAAPKKLTVHVNSAEVEASSSAGTRYQNAGSLGGVAH-IGGLSLVVGE	(867)
S. BEET	krrvkiKeyIVqkdagaikvkglgrrtsshngGgffVsv-IedLrqlvGg	(900)
SPINACH	RkgtkingyIVrtgavtrkgdkSkikstpdarkGefiVAe-IsGLnLllGr	(896)
ARABID.	envenvKtyeVrtserlrsprisiiktcvsdnddprflsvevakLSLlVCK	(993)
BARLEY	EFELKV---AMSY	(877)
S. BEET	aFkLelefegAtrv	(914)
SPINACH	EFkL-----vlh	(903)
ARABID.	kFEmri-----rlt-	(902)

FIG 2